

Green Jobs: what are they, how many, and where are they?



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March 18, 2009

So what is a Green Job?

The definition of “Green Jobs” is unclear. But generally it refers to jobs created through societal efforts to curb global warming and climate change or to provide some other environmental benefit.

Some of these are in traditional fields

Some are in emerging fields



State of Minnesota definition

Green Jobs are employment opportunities in four industry sectors that are part of the green economy including:

- Green Products
- Renewable Energy
- Green Services
- Environmental Conservation



Green Products

Green Products are industries related to the manufacture of products that reduce environmental impact and improve use of resources such as energy efficiency, water conservation and use of environmentally preferred materials.

- Green Products are used in one of the following four areas:
 - *Building*
 - *Transport*
 - **Consumer Products**
 - **Industrial Products**



Renewable Energy

Renewable Energy includes industries related to the production of energy from natural resources such as solar, wind, hydropower, geothermal, biomass and biofuels such as ethanol, cellulosic ethanol and biodiesel. The Renewable Energy category also includes industries that recover and use waste heat, and industries that utilize biomass (animal waste, crop waste etc) for energy including cogeneration.



Green Services

Green Services are industries and occupations that are providing a range of services that help business and individual consumers use green products and technologies, and are building energy infrastructure and occupations related to energy efficiency, farming, and recycling and waste management



Environmental Conservation

Environmental Conservation includes industries related to conservation of energy, air, water and land including air emissions control, monitoring and compliance, water treatment, water conservation, wastewater treatment, land management (including prairie), natural pesticides, aqua culture, local/ organic farms.



Wikipedia (final authority on everything)

A **green-collar worker** is a worker who is employed in the environmental sectors of the economy, or in the [agricultural](#) sector. Environmental green-collar workers satisfy the demand for [green development](#). Generally, they implement environmentally conscious design, policy, and technology to improve [conservation](#) and [sustainability](#). Formal environmental regulations as well as informal social expectations are pushing many firms to seek professionals with expertise with environmental, [energy efficiency](#), and clean [renewable energy](#) issues. They often seek to make their output more sustainable, and thus more favorable to public opinion, governmental regulation, and the Earth's [ecology](#).



Wikipedia Ctd,

Green collar workers include professionals such as [conservation movement](#) workers, environmental consultants, environmental or biological systems engineers, [green building architects](#), holistic [passive solar building designers](#), [solar energy](#) and [wind energy](#) engineers, [nuclear engineers](#), [green vehicle](#) engineers, "green business" owners, [green vehicle](#), organic farmers, environmental lawyers, ecology educators, and [ecotechnology](#) workers.



Wikipedia

Green collar workers also include vocational or trade-level workers: electricians who install solar panels, plumbers who install solar water heaters, construction workers who build energy-efficient green buildings and wind power farms, construction workers who weatherize buildings to make them more energy efficient, or other workers involved in clean, renewable, sustainable future energy development.



Social dimensions of Green Jobs

Green Jobs should be Good Jobs:

- **Rebuild a strong middle class**
- **Provide Pathways out of Poverty**
- **Green-Collar Jobs Require Some New Skills (and some new thinking about old skills)**
- **Green-Collar Jobs Tend To Be Local Jobs**



Rebuild a Strong Middle Class

“Like blue-collar jobs, green-collar jobs pay family wages and provide opportunities for advancement along a career track of increasing skills and wages. A job that does something for the planet, and little to nothing for the people or the economy, is not a green-collar job.” -- Van Jones, founder, Green For All



Pathways out of Poverty

Most green-collar jobs are middle-skill jobs requiring more education than high school, but less than a four-year degree -- and are well within reach for lower-skilled and low-income workers as long as they have access to effective training programs and appropriate supports.



New v. Old Skills

The green economy demands workers with new skill sets. Some green collar jobs -- say renewable energy technicians -- are brand new. But even more are existing jobs that are being transformed as industries transition to a clean energy economy: computer control operators who can cut steel for wind towers as well as for submarines; or mechanics who can fix an electric engine as well as an internal combustion engine.



Local Jobs, not easily outsourced

Much of the work we have to do to green our economy involves transforming the places that we live and work and the way we get around. These jobs are difficult or impossible to offshore. One of the major sources of manufacturing jobs is parts for wind towers and turbines. Because of their size and related high transportation costs, they are most cost-effectively produced as near as possible to wind-farm sites.



So, how many jobs and what are they worth?

According to **Workforce Management**:

- *In the U.S., 5.3 million jobs have been created by environmental management and protection, according to a 2006 study by Management Information Services Inc., a Washington, D.C., research firm that has been tracking green jobs for two decades.*
- *Those jobs include such titles as chief sustainability officer, solar-panel installer and software engineer, on top of more traditional environmental careers in wastewater treatment and hazardous materials management.*
- *Those workers already make up a sizable part of the economy. The 5.3 million figure is almost half the number of people employed by hospitals, and nearly a third of the number in construction. It's 10 times the number of jobs in the pharmaceutical industry.*
- *By 2010, green employment is expected to reach 5.8 million jobs; by 2020, 6.9 million. Meanwhile, corresponding green-industry sales—including energy suppliers and consumer-products makers—are predicted to climb from \$341 billion to \$496 billion in 2020.*



Tip of the iceberg? ASES Reports:

- **Renewable energy and energy efficiency currently provide more than 9 million jobs and \$1,045 billion in revenue in the U.S. (2007).** The previous year (2006) renewable energy and energy efficiency represented 8.5 million jobs and \$972 billion in revenue.
- **95% of the jobs are in private industry.**
- **As many as 37 million jobs can be generated by the renewable energy and energy efficiency industries in the U.S. by 2030** – more than 17% of all anticipated U.S. employment.
- **Hottest sectors include solar thermal, solar photovoltaics, biofuels, and fuel cells** (in terms of revenue growth).
- **Hot job areas include electricians, mechanical engineers, welders, metal workers, construction managers, accountants, analysts, environmental scientists, and chemists.** The vast majority of jobs created by the renewable energy and energy efficiency industries are in the same types of roles seen in other industries (accountants, factory workers, IT professionals, etc).
- **Renewable energy and energy efficiency can create millions of well-paying jobs, many of which are not subject to foreign outsourcing.** These jobs are in two categories that every state is eager to attract – college-educated professional workers (many with advanced degrees), and highly skilled technical workers.
- **The renewable energy industry grew more than three times as fast as the U.S. economy in 2007** (not including hydropower). Renewable energy is also growing more rapidly than the energy efficiency industry, but the energy efficiency industry is currently much larger than the renewable energy industry.



What are the CA Green jobs that exist today?

- State Labor Market Information Division looked at more than 80 studies
- Compiled and classified the lists
- Identified about 200 titles—in many cases tied them to existing occupations
- Occupations range from laborers to secretaries to research scientists, engineers and architects
- Often the difference between these workers and others with the same title is new materials or methods



Sample Pathways into Green Jobs

Occupations with reskilling potential

Construction Managers
Loan Officers
Loan Interviewers and Clerks
Management Analysts
Real Estate Brokers

Carpenters
Construction Trades, Helpers
Glaziers

Carpenters



Electricians
Heating and A/C
Technicians/Installers
Plumbers
Roofers
Sheet Metal Workers

Potential Green Jobs (transferrable skills)

Energy Auditors, Commercial and Residential

Insulation and Weatherization Workers

Solar PV Panel Installers and Technicians

Are there jobs? Apparently, yes.

- **897,000** California orders in the system (active in the last 90 days) overall.
- More than **17,000** active “**green**” **job orders** (searching all job orders for selected “green keywords”).
- For our 22 target occupations, 31,500 active job orders
- Filtering these job orders for selected “green key words” yielded **4,700 job orders with green aspects**.



Key words included green; clean tech; solar; wind; LEED; sustainable; sustainability; alternative energy; energy efficient; PV; biofuel; biomass; weatherization; tankless; global warming; recycling, etc.

» Source: Bonnie Graybill, EDD, Labor Market Information Division

Recovery Plan Elements for Green Jobs

Education and Training

Funding streams that can be used to provide low-income people with training for and access to green jobs and careers.



- Workforce Investment Act (WIA) Adult Program
- WIA—Dislocated Workers
- WIA—Dislocated Workers National Reserve
- WIA—Youth
- YouthBuild
- Green Jobs: Energy Efficiency and Renewable Energy Worker Training
- Job Corps: Construction, Rehabilitation, Acquisition, and Operation
- Corporation for National Service: AmeriCorps and AmeriCorps VISTA Expansion

Source: *Bringing Home the Green Recovery, Green For All*

Recovery Green Jobs Programs Ctd.

Energy Efficiency and Sustainability

Funding for energy efficiency and sustainability programs, primarily for housing, schools, and public buildings.



- Weatherization Assistance Program
- Energy Efficiency and Conservation Block Grants
- State Energy Program
- Converting Federal Buildings to High-Performance Green Buildings
- Veterans Medical Facilities
- Public Housing Capital Fund: Formula and Competitive Grants
- Native American Housing Block Grants
- Energy Retrofit of Elderly, Disabled and Section 8 Assisted Housing
- Community Development Fund: Neighborhood Stabilization Program

Recovery Green Jobs Programs

Green Energy Infrastructure

Funding for smart grid investment and transit systems.

- Smart Grid Investment Program
- Supplemental Discretionary Grants for a National Surface Transportation System
- Transportation Enhancement Activities, including Pedestrian and Bicycling Facilities, Using Highway Investment Funds
- On-the-Job Training Supportive Services for Highway Construction Projects
- Capital Assistance for High Speed Rail Corridors and Intercity Passenger Rail Service
- Amtrak Capital Grants
- Transit Capital Assistance
- Fixed Guideway Infrastructure Investment
 - Capital Investment Grants
- Department of Defense, Facilities and Construction



Recovery Green Jobs Programs

Water, Parks, and Environmental Remediation

Funding to build clean, healthy communities.



- Watershed and Flood Prevention Operations
- Watershed Rehabilitation Program
- Clean Water and Safe Drinking Water
- Department of Agriculture, Rural Utilities Service, USDA Water and Environmental Programs
- Water and Related Resources
- Department of Energy, Environmental Management Program: Defense and Non-Defense Environmental Cleanup
- Management of Lands and Resources, Construction, and Wildland Fire Management
- Department of the Interior, U.S. Fish and Wildlife Services
- Department of the Interior, National Park Service
- Hazardous Substance Superfund Remediation Program
- Leaking Underground Storage Tank Trust Fund
- Brownfields Training, Research, and Technical Assistance Grants and Cooperative Agreements
- International Boundary and Water Commission: Water Quantity Program

Scale of funding


The Recovery Act provides \$787 billion over the next ten years, with most of the spending occurring over the next two years.

The act includes \$48 billion in investments in job training and education, nearly \$100 billion in funding for transportation and infrastructure, \$20 billion in tax incentives for renewable energy, and more than \$41 billion for energy-related programs.

A substantial portion of these funds can be used to green our economy and communities while creating quality employment and training opportunities that provide pathways out of poverty.



Conclusions

- We are transforming the way we fuel the world's largest economy
- Transformational change brings huge challenges and uncertainty but correspondingly huge opportunities. Green Jobs are real
- Workforce Development is a major challenge and opportunity
-  Green Jobs have the potential to unite Americans around a sustainable future.